

REMARKS UNDER 37 CFR § 1.111

Formal Matters

Claims 15-37 are pending after entry of the amendments set forth herein.

Claims 1-26 were examined. Claims 1-26 were rejected.

Applicants respectfully request reconsideration of the application in view of the amendments and remarks made herein.

No new matter has been added.

The Office Action

In the Official Action of March 24, 2005, claims 1-6, 9-15 and 18-26 were rejected under 35 U.S.C. Section 102(a) as being anticipated by the "Imagene Tutorial". The Examiner asserted that the Imagene Tutorial discloses a graphical user interface to display an image of a molecular array, and that feature extraction results are displayed within a "Quantified Data" dialog box. The Examiner further noted that a green cross is displayed over "poor" features.

Claims 1-6 and 9-14 have been canceled, without prejudice, above. Claim 15 has been amended to further recite that distinct graphical objects representing at least two different characteristics of the data on the molecular array are superimposed over positions where the data characteristics represented occur on the displayed image of the molecular array. The Imagene Tutorial does not disclose such superimposition of graphical objects with regard to at least two different characteristics of the data. Rather, the characteristics are reported textually in the "Quantified Data" dialog box, as noted by the Examiner.

As to claim 18, the Examiner asserted that the user of the Imagene application disclosed in the Imagene Tutorial may select feature extraction results to display. The Examiner referred to page 8 as support for this assertion. However, page 8 refers to removing image artifacts with the "Signal Percentages" and "Background Percentages" tools. There is no disclosure of selecting out good features so as not to display them. With regard to claims 19-23, the Examiner asserted that results of the feature extraction may be displayed as graphical objects superimposed over the displayed image of the molecular array. Applicants respectfully submit that the Imagene Tutorial fails to disclose distinct graphical objects that are overlaid to indicate a statistically valid feature or a statistically valid feature background or a statistically invalid feature background or the position of a feature. Further, since the

only marks disclosed by the Imagen Tutorial are x's over bad features, Imagen Tutorial also fails to disclose superimposition of distinct graphical objects having distinct colors. Furthermore, the Imagen Tutorial does not even disclose calculation of the characteristics that are superimposed by the present invention as claimed.

In view of the above amendments and remarks, the Examiner is respectfully requested to reconsider and withdraw the rejection of claim 15 (claims 1-6 and 9-14 having been canceled without prejudice above) under 35 U.S.C. Section 102(a) as being anticipated by the Imagen Tutorial, as being inappropriate.

Claims 7-8 and 16-17 were rejected under 35 U.S.C. Section 103(a) as being unpatentable over the Imagen Tutorial, in view of Malamud et al. (U.S. Patent No. 6,437,800). The Examiner asserted that Malamud et al. teaches displaying a tooltip in response to a user positioning a pointer over a graphical object, wherein the tooltip displays alphanumeric information associated with the object, and that it would have been obvious to modify the user interface of the Imagen Tutorial to include the tooltips of Malamud et al., so that in response to positioning a cursor over a feature, alphanumeric data associated with that feature is displayed in a tooltip.

Applicants respectfully disagree. Malamud et al. discloses the functionality of tooltips generally to display the name of an object pointed to, a preview of the contents of the object, or property information about the object. The Imagen Tutorial does not disclose or suggest superimposing or otherwise displaying results characterizing features calculated from data from within images of the features themselves. At most, the Imagen Tutorial simply crosses off features that were not considered for preparation of the information characterizing the array. Therefore, there would have been no suggestion to provide tooltips as claimed, since the Imagen Tutorial relies on referencing the "Quantified Data" box to obtain results of processing. Any tooltips used would thus be in reference to the Quantified Data object, not the image of the array. Further, Malamud et al. does nothing to overcome the deficiencies in the Imagen Tutorial in meeting the recitations of claim 15, since Malamud et al. is not even in the field of bioinformatics and therefore does not address processing of molecular arrays or displaying of information obtained thereby.

In view of the above amendments and remarks, the Examiner is respectfully requested to reconsider and withdraw the rejection of claims 16-17 (claims 7 and 8 having been canceled without prejudice above) under 35 U.S.C. Section 103(a) as being unpatentable over the Imagen Tutorial, in view of Malamud et al. (U.S. Patent No. 6,437,800), as being inappropriate.

It is respectfully submitted that new claims 27-37 also patentably define over the art of record.

New independent claim 27 recites a graphical user interface that displays results of a feature extraction process carried out on data collected from a molecular array, including a molecular array image display component that displays an image of the molecular array; and a feature-extraction-results rendering component that displays feature extraction results as graphical objects superimposed on the displayed image of the molecular array, the graphical objects including distinct graphical objects representing at least two distinct characteristics of the data determined by said feature extraction results. As noted above, neither the Imogene Tutorial nor Malamud et al. discloses or suggests superimposing distinct graphical objects representing at least two distinct characteristics of the data over the image of the molecular array.

Claim 28 depends from claim 27, and further recites that said distinct graphical objects include distinct graphical objects to represent at least two of: a position of a feature within the image of the molecular array, a statistically valid feature, a statistically invalid feature, an outlier feature, a statistically valid background region around a feature, and an outlier background region. Neither the Imogene Tutorial nor Malamud et al., whether taken alone or in any proper combination, discloses or suggests these features.

Claim 29 depends from claim 28, and further recites that said distinct graphical object representing a position of a feature within the image of the molecular array comprises a distinct graphical object representing a center of a feature. There is no suggestion or disclosure by the references of record of superimposing such a distinct graphical object.

Claim 30 depends from claim 28, and further recites that said distinct graphical object representing a position of a feature within the image of the molecular array includes at least one of a distinct graphical object representing a center of a feature found by analyzing pixel intensities within and near the feature, and a distinct graphical object representing a center of a feature determined based on row and column indices of the feature and on a refined feature grid determined from locations of strong features identified, none of which are disclosed or suggested by the art of record.

Claim 31 depends from claim 28, and further recites that said distinct graphical object representing an outlier feature includes at least one of a distinct graphical object representing an outlier feature due to non-uniformity of pixel intensities within the feature, a distinct graphical object representing an outlier feature due to statistical variance in signal intensity from other features on the molecular array, and a distinct graphical object representing an outlier due to both non-uniformity of pixel intensities within the feature and statistical variance in signal intensity from other features on the molecular array, none of which are disclosed or suggested by the art of record.

Claim 32 depends from claim 28, and further recites that said distinct graphical object representing an outlier background region includes at least one of a distinct graphical object representing an outlier background region due to non-uniformity of pixel intensity within the background region, a distinct graphical object representing an outlier background region due to statistical variation in signal intensity of the background region from signal intensity of background regions surrounding other features in the molecular array, and a distinct graphical object representing an outlier background region due to both non-uniformity of pixel intensity within the background region and statistical variation in signal intensity of the background region from signal intensity of background regions surrounding other features in the molecular array, none of which are disclosed or suggested by the art of record.

Claim 33 depends from claim 28, and further recites a user-selectable feature for directing said feature-extraction-results rendering component to display said feature extraction results as graphical objects superimposed on the displayed image of the molecular array only for outlier features and features surrounded by outlier background regions. The Imagen Tutorial lacks a disclosure or suggestion of such a feature, as noted above. Malamud et al. has nothing to do with processing to obtain feature extraction results.

Claim 34 depends from claim 27, and recites that the graphical user interface displays numerical, textual, or numerical and textual information specific to a feature in a tool tip in response to input identifying a particular feature. Claim 34 is allowable for reasons similar to those stated with regard to claim 16 above. Claim 35 depends from claim 34 and recites that the input constitutes positioning of a cursor over the feature in the displayed image of the molecular array. Claim 35 is allowable for reasons similar to those stated with regard to claim 17 above.

Claim 36 depends from claim 27, and recites that each of said distinct graphical objects is distinct from all others of said distinct graphical objects in terms of at least one of shape and color. This is neither disclosed nor suggested by the Imagen Tutorial nor Malamud et al.

Claim 37 depends from claim 15, and further recites that said superimposing distinct graphical objects comprises superimposing distinct graphical objects to represent at least two of: a position of a feature within the image of the molecular array, a statistically valid feature, a statistically invalid feature, an outlier feature, a statistically valid background region around a feature, and an outlier background region, features which are clearly neither disclosed nor suggested by the art of record.

Conclusion

Applicants submit that all of the claims are in condition for allowance, which action is requested. If the Examiner finds that a telephone conference would expedite the prosecution of this application, please telephone the undersigned at the number provided.

The Commissioner is hereby authorized to charge any underpayment of fees associated with this communication, including any necessary fees for extensions of time, or credit any overpayment to Deposit Account No. 50-1078, order number 10010327-1.

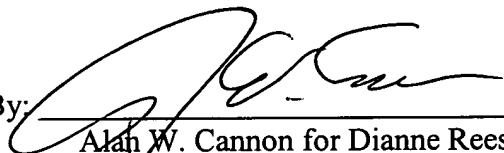
Respectfully submitted,

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